

REMARKS/ARGUMENTS

Claims 1-9 and 11-21 are pending herein. Claims 1, 2, 4, 11-13, 15 and 16 have been amended hereby, and claim 10 has been cancelled hereby without prejudice or disclaimer. More specifically, claim 1 has been rewritten to clarify that the area between immediately radially adjacent flexures is varied, and claim 2 has been rewritten to clarify that a first distance, measured between a portion of one of the wirings before the wiring is folded to form the folding part and an opposed, immediately radially adjacent portion of the wiring after the folding part, is substantially constant, whereas a second distance, measured between a portion of the wiring at one end of the folding part and an opposed, immediately radially adjacent portion of the wiring at the other end of the folding part, is greater than the first distance. Claim 4 has been rewritten in independent form. Claim 10 has been cancelled in favor of new claim 21, and claims 11-13 have been amended to depend from new claim 21. Claim 15 has been amended to recite that the swollen portion of the flexure curves in an asymptotic direction with respect to at least one of an adjacent portion of at least one element line and an adjacent portion of another immediately adjacent element line.

Applicant respectfully submits that support for rewritten claims 1, 2 and 15, and for new claim 21, can be found, for example, in Figs. 6A, 7, 8, 11 and 12 and pages 10-16 of the specification, and that no new matter has been added.

1. Examiner Paik is thanked for the courtesies extended to Applicant's undersigned representative during a telephonic interview on May 25, 2005, the substance of which is incorporated below. Examiner Paik indicated during the interview that the changes to claims 1, 2 and 15, and new claim 21, introduced new issues that had not been previously presented in dependent claims, and that such amendments and new claims would not be entered after final rejection without an RCE. Accordingly, an RCE is filed herewith.

2. Applicant appreciates Examiner Paik indicating that claim 4 would be allowed if rewritten in independent form. Applicant respectfully submits that claim 4 has been so rewritten. In addition to rewritten claim 4, Applicant respectfully submits that all claims pending herein are in condition for allowance, and respectfully requests that the PTO issue a Notice of Allowance for this application in due course.

3. Claims 1, 15-17, 19 and 20 were rejected under §102(b) over Kano. Applicant respectfully traverses this rejection.

Independent claim 1 recites a heater comprising a plate including a heating surface which heats an object to be heated, and a resistance heater element provided in the plate. The resistance heater element comprises a continuous wiring pattern including a plurality of flexures and a uniform thermal pattern portion. An area between immediately radially adjacent flexures is varied to improve thermal uniformity between the immediately adjacent flexures.

Applicant respectfully submits that support rewritten claim 1 can be found, for example, in Figs. 6A, 11 and 12 and pages 10-16 of the original specification.

Independent claim 15 recites a heater comprising a plate including a heating surface which heats an object to be heated, and a resistance heater element provided in the plate. The resistance heater element comprises a wiring pattern including a plurality of concentrically disposed element lines having terminals for input/output of electric power, and each element line includes a winding pattern. At least one element line passes between the terminals by means of a flexure, which includes a swollen portion that curves in an asymptotic direction with respect to at least one of an adjacent portion of the at least one element line and an adjacent portion of another immediately adjacent element line.

Applicant respectfully submits that support for rewritten claim 15 can be found, for example, in Figs. 11 and 12 and pages 14-16 of the original specification.

With respect to independent claim 1, Examiner Paik asserted that the folded portions of the heating elements in Kano correspond to the claimed continuous wiring pattern with a plurality of flexures, and that such a structure or arrangement "meeting all the recited elements would provide the thermally uniform area between the radially

adjacent flexures as claimed by applicants" (Office Action, page 5, lines 19-22).

Applicant respectfully submits, however, that there is no disclosure in Kano that the area between immediately radially adjacent folded portions (flexures) is varied in any way. In fact, Applicant respectfully submits that, in Kano, the space (area) between all of the flexures, even the immediately radially adjacent flexures, is shown as being substantially constant. Indeed, Applicant respectfully submits that there is no disclosure in Kano that the space between folded portions or flexures is, should or even could be varied for any reason.

With respect to independent claim 15, Examiner Paik asserted that Kano discloses swollen parts "clearly shown by the protruding portions of the heating wire near the terminal ends where the protruding portions in the asymptotic direction with each other so as to narrow the gap between the adjacent fixtures [sic, flexures]" (Office Action, page 5, last line-- page 6, line 3).

Applicant respectfully submits, however, that, as explained above in connection with rewritten independent claim 1, Kano does not disclose that the gap or space between any of the immediately radially adjacent flexures is anything other than substantially constant. Further, Applicant respectfully submits that Kano does not disclose that any portion of Kano's flexures curve in an asymptotic direction with respect to at least one of an adjacent portion of at least one element line and an adjacent portion of another immediately adjacent element line, as recited in claim 15.

In view of the fact that Kano does not disclose each and every feature recited in independent claims 1 and 15, Applicant respectfully submits that independent claims 1 and 15 define patentable subject matter over Kano, and respectfully requests that the above rejection be reconsidered and withdrawn.

4. Claims 1, 2, 5 and 8 were rejected under §102(b) over Hurko. Applicant respectfully traverses this rejection.

Independent claim 1 is discussed in section 3 above.

Independent claim 2 recites a heater including, among other things, a resistance heater element provided in a plate having a heating surface. The resistance heater element comprises a continuous wiring pattern including a plurality of radially sequential wirings having a plurality of radially adjacent folding parts. A first distance

between a portion of one of the wirings before the wiring is folded to form one of the folding parts and an opposed, immediately radially adjacent portion of the wiring after the wiring is folded to form the folding part is substantially constant, and a second distance between a portion of the wiring at one end of the folding part and an opposed, immediately radially adjacent portion of the wiring at the other end of the folding part is greater than the first distance.

Applicant respectfully submits that support for rewritten claim 2 can be found, for example, in Fig. 6A, 7, 8, 11 and 12 and pages 10-16 of the original specification.

Applicant respectfully submits that Hurko does not disclose a plurality of immediately radially adjacent flexures (as recited in independent claim 1) or immediately radially adjacent folding parts (as recited in independent claim 2).

Applicant respectfully submits that this position is actually bolstered by the comments in the Response Section of the Office Action, where Examiner Paik recognized that, in Hurko, "one of the folding portion[s] is in near the center of the plate and another one in the peripheral region of the plate" (Office Action, page 6, lines 7-8).

In view of the above, Applicant respectfully submits that the centrally disposed folding portion, near the center of Hurko's plate, is not "immediately radially adjacent" to the peripherally disposed folding portion because two strips of Hurko's film strip heater are radially interposed between the respective folding parts, thus preventing those folding parts from actually being immediately radially adjacent.

For at least the foregoing reasons, Applicant respectfully submits that Hurko does not disclose each and every element recited in independent claim 1 and 2, and that claims 1, 2, 5 and 8 define patentable subject matter over Hurko. Accordingly, Applicant respectfully requests that the above rejection be reconsidered and withdrawn.

5. Claims 1 and 10 were rejected under §102(e) over Fure. Applicant respectfully traverses this rejection.

Rewritten independent claim 1 is discussed in section 3 above.

Claim 10 has been cancelled without prejudice or disclaimer in favor of new claim 21 submitted above. New claim 21 recites a heater including, among other things, a resistance heater element provided in a plate having a heating surface and at least one

hole formed therein. The resistance heater element comprises a continuous wiring pattern including a plurality of flexures connecting a plurality of radially sequential, substantially concentric arc portions, and a plurality of curved avoidance portions. The avoidance portions have a radius of curvature that deviates from a radius of curvature of the arc portions to circumvent the hole in the plate, and the radius of curvature of each avoidance portion on each radially sequential arc portion increases as the radial distance between each avoidance portion and the hole increases.

Applicant respectfully submits that support for new claim 21 can be found in original claim 10 and Figs. 6A and 10, for example, and pages 10-16 of the original specification.

Examiner Paik asserted that Fig. 3 of Fure shows a resistance heater element having a continuous wiring pattern that includes a plurality of flexures and "a plurality of curved portions having a radius of curvature that sequentially increases as the respective distance between the curved portion and the hole increases" to maintain thermal uniformity (Office Action, page 3, lines 5-9). Applicant respectfully disagrees with Examiner Paik's characterization of Fure.

That is, Applicant respectfully submits that Fure does not disclose, or even suggest, that the area between radially adjacent flexures, particularly between immediately radially adjacent flexures, actually varies, as recited in claim 1, for any reason. Indeed, Applicant respectfully submits that the space between immediately radially adjacent flexures in Fure is substantially constant. Further, Applicant respectfully submits that the gap G between adjacent strips (wirings) 5 shown in Fure's Fig. 3 is varied for no reason other than merely to allow the path of the strips to avoid the sensor installation holes shown in Fure's Fig. 3. That is, in Fure, the strips 5 do not correspond to the claimed flexures, rather, Fure's strips 5 are merely portions of the wiring pattern. If anything, the folded back portions 5b shown in Fure's Fig. 2 would be a similar structural portion, though by no means identical, to that of the claimed flexures. There is simply no disclosure in Fure that the distance between immediately radially adjacent folded back parts of 5 in Fig. 3 is varied for any reason.

Further, Fure does not disclose a plurality of substantially concentric arc portions including curved portions that each avoid a hole and have a radius of curvature that sequentially increases as the distance between each of the curved avoidance portions and

the hole increases, as recited in new independent claim 21. That is, Fure's Fig. 3 merely shows that a plurality of sensor installation holes 64 are provided, but only one part of the arc portion of the strips 5, located immediately on either side of each hole, is further curved to avoid that hole. That is, the other radially sequential arc portions of the wiring pattern 5 that are not immediately adjacent the sensor installation hole are not also curved to form avoidance portions that also avoid the hole such that each radially sequential avoidance portion has an increasing radius of curvature as the radial distance (outwardly or inwardly) from that avoidance portion and the hole increases as claimed.

In view of the above, Applicant respectfully submits that Fure does not disclose each and every element recited in independent claims 1 and 10. Accordingly, Applicant respectfully submits that claims 1 and 10 define patentable subject matter over Fure, and respectfully request that the above rejection be reconsidered and withdrawn.

6. Claims 2, 3, 5, 8-11, 13 and 14 were rejected under §103(a) over Fure in view of Mizuno. Applicant respectfully traverses this rejection.

Independent claim 2 is discussed in section 4 above.

Examiner Paik admitted that Fure does not disclose that a second distance between radially adjacent wirings in the second region (proximate the folding part) is greater than the first distance between radially adjacent wirings in another region of the wiring pattern other than the second region, as recited in claim 2. In an attempt to overcome the admitted deficiency of the primary reference, Examiner Paik applied Mizuno, and asserted that it would have been obvious to one of ordinary skill in the art to "adapt Fure with the claimed second distance between the radially adjacent wirings in the second region to further provide a uniform heating distribution along the heating surface" (Office Action, page 4, lines 7-9).

Examiner Paik did not address the arguments submitted in the December 16, 2004 Amendment with respect to Mizuno, now applied as a secondary reference. Instead, Examiner Paik asserted that Mizuno's heating pattern includes a plurality of flexures with a folding part where the distance between the radially adjacent wirings gradually becomes wider in the second region than in the first region where the distance remains substantially

constant (see Office Action, page 4, lines 3-5) to support his asserted combination of references.

Applicant respectfully submits, however, that Mizuno does not disclose the claimed area relationship between immediately radially adjacent wirings for the reasons already explained in the December 16, 2004 Amendment, the entirety of which is incorporated herein by reference. Moreover, one of ordinary skill in the art would not have been motivated to modify any of the overall gap dimensions specifically provided by Fure, particularly at the folded parts 5b, for any reason, much less to provide a structure based only on the artist's rendition shown in Mizuno's Fig. 3.

Applicant respectfully submits that Mizuno does not include any concrete disclosure that the inner distance between immediately radially adjacent wirings on either side of each folded region is actually greater than the substantially constant distance between immediately radially adjacent wirings in the other regions of the wiring pattern. That is, Mizuno does not disclose or suggest any reasons why the distances should be different, and is silent with respect to any benefits associated with varying the distances in the manner proposed by Examiner Paik. Absent any such concrete disclosure or suggestion in Mizuno, Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify Fure's structure based only on the artist's rendition shown in Mizuno without otherwise relying on the benefit of the present application as a guide. Such hindsight-based rejections are, of course, not permitted.

Even in view of the above, however, Applicant respectfully submits that independent claim 2 has been rewritten to clarify the claimed spacing relationship, and to further distinguish the patentable features of the present invention from the applied references. That is, Applicant respectfully submits that none of the applied references disclose or suggest that a first distance, measured between a portion of one of the wirings before the wiring is folded to form the folding part and an opposed, immediately radially adjacent portion of the wiring after the folding part, is substantially constant, and that a second distance, measured between a portion of the wiring at one end of the folding part and an opposed, immediately radially adjacent portion of the wiring at the other end of the folding part, is greater than the first distance.

For at least the foregoing reasons, Applicant respectfully submits that all claims pending herein define patentable subject matter over the applied references. Accordingly, Applicant respectfully requests that the above rejection be reconsidered and withdrawn.

7. Claims 6, 7 and 12 were rejected under §103(a) over Fure in view of Mizuno and further in view of Yoshida, and claim 18 was rejected under §103(a) over Kano in view of Yoshida.

Claims 6 and 7 each depend from independent claim 2, which is discussed above in sections 4 and 6. Claims 12 and 18 each depend from independent claim 15, which is discussed in section 1 above. Since independent claims 2 and 15 define patentable subject matter over the applied references for the reasons discussed above, Applicant respectfully submits that claims 6, 7, 12 and 18 likewise define patentable subject matter over the applied references by virtue of their respective dependencies from claims 1 and 15.

For at least the foregoing reasons, Applicant respectfully submits that all claims pending herein define patentable subject matter over the prior art of record, and respectfully request that the above rejections be reconsidered and withdrawn.

If Examiner Paik believes that contact with Applicant's attorney would be advantageous toward the disposition of this case, he is herein requested to call Applicant's attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

My 27, 2005

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